Amended Claims

CLAIMS

1-17. Claims 1-17 (canceled).

18. (new) A method of detecting suspect production tools, said method comprising:

testing produced products using a test sequence, said testing producing yield data, said yield data related to a production batch and a production process, said production process identified with a process tool;

calculating and storing for each production process a first data series R1, wherein each element of said first series is the yield of a production batch divided by a baseline yield;

calculating and storing for each production process a second data series R2, wherein each element of said second series is an m consecutive element moving average of R1;

calculating and storing a simple linear regression of R1;

calculating the standard deviations of data series R1 and R2;

calculating for each production process lower trigger points for series R1 1-n standard deviations of R1 for the last p data points;

calculating and storing for each production process lower trigger points for series R2 being 1-o standard deviations of R2 for the last o data points;

calculating and storing R^2 of said simple linear regression of R1;

applying decision rules to data series for each production process to produce a list of suspect processes, wherein each rule that is matched stores a match point against said production process; wherein said rules include:

a first rule matched when r consecutive elements of series R1 are lower than said lower trigger point of series R1,

a second rule matched when s consecutive elements of series R2 are lower than said lower trigger point of series R2, and

a third rule matched when R^2 is greater than a trigger point z;

calculating for each process tool the number of match points of said production processes identified with said tool; and notifying a user of said tools that have the most match points.

19. (New) A method of detecting suspect production tools as claimed in claim 18 wherein the values of m, n, o, p, r, s and z to be used are calculated using a confusion matrix and historic data, said data including data on the success and failure of detecting suspect production tools, said values to be used determined when the accuracy of detection and the capture rate are maximized.

20. (New) A system implementing the method of claim 18.

21. (New) Software for effecting the method of claim 18.

22. (New) A method of detecting suspect production tools, said method comprising:

testing produced products using a test sequence, said testing producing yield data, said yield data related to a production batch and a production process, said production process identified with a process tool;

calculating and storing for each production process a first data series R1, wherein each element of said first series is the yield of a production batch divided by a baseline yield;

calculating the standard deviation of data series R1;

calculating for each production process lower trigger points for series R1 1-n standard deviations of R1 for the last p data points;

applying decision rules to data series for each production process to produce a list of suspect processes, wherein each rule that is matched stores a match point against said production process; wherein said rules include:

a first rule matched when r consecutive elements of series R1 are lower than said lower trigger point of series R1;

calculating for each process tool the number of match points of said production processes identified with said tool; and

notifying a user of said tools that have the most match points.

23. (New) A method of detecting suspect production tools as claimed in claim 22 wherein the values of m, n, o, p, r, s and z to be used are calculated using a confusion matrix and historic data, said data including data on the success and failure of detecting suspect production tools, said values to be used determined when the accuracy of detection and the capture rate are maximized.

24. (New) A system implementing the method of claim 22.

25. (New) Software for effecting the method of claim 22.

26. (New) A method of detecting suspect production tools, said method comprising:

testing produced products using a test sequence, said testing producing yield data, said yield data related to a production batch and a production process, said production process identified with a process tool;

calculating and storing for each production process a first data series R1, wherein each element of said first series is the yield of a production batch divided by a baseline yield;

calculating and storing for each production process a second data series R2, wherein each element of said second series is an m consecutive element moving average of R1;

calculating the standard deviation of data series R2;

calculating and storing for each production process lower trigger points for series R2 being 1-o standard deviations of R2 for the last o data points;

applying decision rules to data series for each production process to produce a list of suspect processes, wherein each rule that is matched stores a match point against said production process; wherein said rules include:

a first rule matched when s consecutive elements of series R2 are lower than said lower trigger point of series R2;

calculating for each process tool the number of match points of said production processes identified with said tool; and

notifying a user of said tools that have the most match points.

27. (New) A method of detecting suspect production tools as claimed in claim 26 wherein the values of m, n, o, p, r, s and z to be used are calculated using a confusion matrix and historic data, said data including data on the success and failure of detecting suspect production tools, said values to be used determined when the accuracy of detection and the capture rate are maximized.

28. (New) A system implementing the method of claim 26.

29. (New) Software for effecting the method of claim 26.

30. (New) A method of detecting suspect production tools, said method comprising:

testing produced products using a test sequence, said testing producing yield data, said yield data related to a production batch and a production process, said production process identified with a process tool;

calculating and storing for each production process a first data series R1, wherein each element of said first series is the yield of a production batch divided by a baseline yield;

calculating and storing a simple linear regression of R1;

calculating and storing R^2 of said simple linear regression of R1;

applying decision rules to data series for each production process to produce a list of suspect processes, wherein each rule that is matched stores a match point against said production process; wherein said rules include:

a first rule matched when R^2 is greater than a trigger point z;

calculating for each process tool the number of match points of said production processes identified with said tool; and

notifying a user of said tools that have the most match points.

31. (New) A method of detecting suspect production tools as claimed in claim 30 wherein the values of m, n, o, p, r, s and z to be used are calculated using a confusion matrix and historic data, said data including data on the success and failure of detecting suspect production tools, said values to be used determined when the accuracy of detection and the capture rate are maximized.

32. (New) A system implementing the method of claim 30.

33. (New) Software for effecting the method of claim 30.

34. (New) A method of detecting suspect production tools, said method comprising:

testing produced products using a test sequence, said testing producing yield data, said yield data related to a production batch and a production process, said production process identified with a process tool;

calculating and storing for each production process a first data series R1, wherein each element of said first series is the yield of a production batch divided by a baseline yield;

calculating and storing for each production process a second data series R2, wherein each element of said second series is an m consecutive element moving average of R1;

calculating the standard deviations of data series R1 and R2;

calculating for each production process lower trigger points for series R1 1-n standard deviations of R1 for the last p data points;

calculating and storing for each production process lower trigger points for series R2 being 1-o standard deviations of R2 for the last o data points;

applying decision rules to data series for each production process to produce a list of suspect processes, wherein each rule that is matched stores a match point against said production process; wherein said rules include:

a first rule matched when r consecutive elements of series R1 are lower than said lower trigger point of series R1, and

a second rule matched when s consecutive elements of series R2 are lower than said lower trigger point of series R2;

calculating for each process tool the number of match points of said production processes identified with said tool; and

notifying a user of said tools that have the most match points.

35. (New) A method of detecting suspect production tools as claimed in claim 34 wherein the values of m, n, o, p, r, s and z to be used are calculated using a confusion matrix and historic data, said data including data on the success and failure of detecting suspect production tools, said values to be used determined when the accuracy of detection and the capture rate are maximized.

36. (New) A system implementing the method of claim 34.

37. (New) Software for effecting the method of claim 34.

38. (New) A method of detecting suspect production tools, said method comprising:

testing produced products using a test sequence, said testing producing yield data, said yield data related to a production batch and a production process, said production process identified with a process tool;

calculating and storing for each production process a first data series R1, wherein each element of said first series is the yield of a production batch divided by a baseline yield;

calculating and storing a simple linear regression of R1;

calculating the standard deviation of data series R1;

calculating for each production process lower trigger points for series R1 1-n standard deviations of R1 for the last p data points;

calculating and storing R^2 of said simple linear regression of R1;

applying decision rules to data series for each production process to produce a list of suspect processes, wherein each rule that is matched stores a match point against said production process; wherein said rules include:

a first rule matched when r consecutive elements of series R1 are lower than said lower trigger point of series R1, and

a second rule matched when R^2 is greater than a trigger point z;

calculating for each process tool the number of match points of said production processes identified with said tool; and

notifying a user of said tools that have the most match points.

39. (New) A method of detecting suspect production tools as claimed in claim 38 wherein the values of m, n, o, p, r, s and z to be used are calculated using a confusion matrix and historic data, said data including data on the success and failure of detecting suspect production tools, said values to be used determined when the accuracy of detection and the capture rate are maximized.

40. (New) A system implementing the method of claim 38.

41. (New) Software for effecting the method of claim 38.

42. (New) A method of detecting suspect production tools, said method comprising:

testing produced products using a test sequence, said testing producing yield data, said yield data related to a production batch and a production process, said production process identified with a process tool;

calculating and storing for each production process a first data series R1, wherein each element of said first series is the yield of a production batch divided by a baseline yield;

calculating and storing for each production process a second data series R2, wherein each element of said second series is an m consecutive element moving average of R1;

calculating and storing a simple linear regression of R1;

calculating the standard deviation of data series R2;

calculating and storing for each production process lower trigger points for series R2 being 1-o standard deviations of R2 for the last o data points;

calculating and storing R^2 of said simple linear regression of R1;

applying decision rules to data series for each production process to produce a list of suspect processes, wherein each rule that is matched stores a match point against said production process; wherein said rules include:

a first rule matched when s consecutive elements of series R2 are lower than said lower trigger point of series R2, and

a second rule matched when R^2 is greater than a trigger point z;

calculating for each process tool the number of match points of said production processes identified with said tool; and

notifying a user of said tools that have the most match points.

43. (New) A method of detecting suspect production tools as claimed in claim 42 wherein the values of m, n, o, p, r, s and z to be used are calculated using a confusion matrix and historic data, said data including data on the success and failure of detecting suspect production tools, said values to be used determined when the accuracy of detection and the capture rate are maximized.

44. (New) A system implementing the method of claim 42.

45. (New) Software for effecting the method of claim 42.